

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-_____

WASTE DISCHARGE REQUIREMENTS
FOR
BERNARD TE VELDE, THE 2000 TE VELDE FAMILY TRUST,
DONALD J. CAMERON, AND TERRANOVA RANCH, INC.
LONE OAK DAIRY #2
FRESNO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. Bernard te Velde, The 2000 te Velde Family Trust, Donald J. Cameron, and Terranova Ranch Inc. (hereafter "Discharger") submitted a Report of Waste Discharge (RWD) for a dairy operation identified as the "Lone Oak Dairy #2" (hereafter "facility") on 12 September 2007 proposing the addition of a thermophilic anaerobic digester system (hereafter "digester system") to the current waste handling and treatment system. The digester system will be owned and operated by Microgy Inc., and will digest a mixture of manure generated at the facility and a supplemental feedstock composed of organic waste materials, to generate biogas.
2. The facility currently operates under Order No. R5-2007-0035, Waste Discharge Requirements General Order for Existing Milk Cow Dairies (hereafter "General Order"), which prohibits the disposal of waste not generated by on-site animal production activities except where a RWD for the disposal has been submitted to the Executive Officer and the Regional Water Board has issued or waived Waste Discharge Requirements (WDRs).
3. The 2000 te Velde Family Trust owns the facility production area (115 acres) and 447 acres of cropland. The facility and cropland occupy Fresno County Assessors Parcel Numbers (APNs) 035-100-22S and 035-100-23S and are within Section 31, Township 15S, Range 18E, both Mount Diablo Base and Meridian. The 2000 te Velde Family Trust reportedly has a written wastewater agreement with Donald J. Cameron to transfer wastewater from the facility to 800 acres of cropland associated with Terranova Ranch, Inc. This cropland occupies Fresno APNs 03012018, 03012034, 04005004, and 04005075 and is within Section 35 Township 15S, Range 17E; Section 2, Township 16S, Range 17E; Section 36, Township 15S, Range 17E; and Section 1, Township 16S, Range 17E, both Mount Diablo Base and Meridian. The facility address is 14523 Dinuba Avenue, approximately seven miles southwest of Kerman, Fresno County, as shown on Attachment A, which is attached hereto and made a part of this Order by reference.

Existing Dairy Facility

4. Lone Oak Dairy #2 has been in operation since 2003. The RWD submitted by the Discharger in September 2007 reported the facility houses 2,560 Holstein milk cows, 430 dry cows, 1,150 heifers (15-24 months), 870 heifers (7-14 months) and 260 calves.
5. The existing dairy includes a milking parlor, wash pens, free stalls, feed lanes, open corrals, two settling ponds and two retention ponds as shown in Attachment B, which is attached hereto and made a part of this Order by reference.
6. Currently, manure is washed from the milk barn and wash pens using fresh water recycled from the milk cooling and cleaning operations. Manure in feed lanes is periodically removed by flushing with recycled wastewater from one of the wastewater retention ponds. Stormwater runoff that contacts manure or waste feed in corrals, and leachate from feed and manure storage areas, are conveyed to the wastewater retention ponds. Manure in corrals is currently removed by periodic scraping and is either applied to facility cropland or removed from the facility for use elsewhere.

Proposed Digester Facility and Operation

7. The September 2007 RWD describes the proposed addition of a digester system to the facility that will generate biogas for sale to the regional gas company. The digester installation will include a 194,000-gallon capacity steel above ground tank (AGT) to store the supplemental feedstock, a 325,000-gallon capacity steel AGT mix tank, and two 1.5 million-gallon AGT digester tanks, with appurtenant pumps and piping. The digester system has not yet been constructed. A diagram of the digester system is shown on Attachment D, which is attached hereto and made a part of this Order by reference.
8. Digester operations will require some modification in dairy waste handling. Feed lanes and free stalls will be vacuumed or scraped rather than routinely flushed. Manure gathered by vacuuming or scraping will be added to the mix tank and diluted with freshwater and recycled digester effluent to about eight percent (8%) solids.
9. Approximately 41,205 gallons of manure from the mix tank and 16,795 gallons of supplemental feedstock from the storage tank will be added to the two digesters daily. The digesters will function as complete-mix reactors with a hydraulic retention time of approximately 21 days. Digester effluent will be removed from the digesters daily and pass through a screw press separator. Separated effluent liquid will be recycled to the manure mix tank or conveyed to the wastewater retention system for holding until it is applied to cropland. Separated digester solids will be stored on a

10. Biogas produced during the digestion will be continuously extracted and conveyed to a moisture removal system on site. Gas from this facility and two other nearby facilities (Johann dairy and Maddox dairy) will then be piped to an onsite gas treatment system (hereafter "biogas scrubber") where carbon dioxide and hydrogen sulfide will be removed prior to delivery to the natural gas pipeline. The biological reaction within the biogas scrubber removes sulfur from the gas stream. Periodically, the biogas scrubber will be flushed with fresh water to remove the accumulated effluent from the reaction surfaces. The Discharger proposed that the effluent from the biogas scrubber be discharged into the facility's wastewater retention system. The reported characteristics of wastewater generated by the biogas scrubber is summarized below:

Constituent	Value	Constituent	Value
Calcium	ND	pH	1.4 pH units
Chloride	ND	Phosphorus (total)	33 ppm
Copper	1 ppm	Potassium (total)	ND
Iron	ND	Sodium	6 ppm
Magnesium	27 ppm	Sulfur	1,403 ppm
Manganese	2 ppm	Total Dissolved Solids	4,000 mg/L
Total Kjeldahl Nitrogen	159 mg/L	Zinc	1 ppm

mg/L – milligrams per liter ppm – parts per million

Source of data: Midwest Laboratories, Inc., Report of Analysis, Ref Lab # 212718, Report Number 07-297-5046 dated 10/30/07

11. Consistent with Title 22 of the California Code of Regulations (Title 22 CCR) §66261.20 the biogas scrubber effluent has the characteristics of a hazardous waste based on corrosivity (Title 22 CCR §66261.22) EPA Hazardous Waste Number (RCRA ID) of D002.
12. The biogas scrubber effluent is mostly sulfuric acid (H_2SO_4). Sulfuric acid is commonly used in the western United States to treat high pH soils. For many years, farmers have used sulfuric acid as a soil amendment to reclaim sodic soils and soils

with high lime (CaCO_3) concentrations. The biogas scrubber effluent may have use as a soil amendment. Provision 13.b of this Order requires the Discharger to evaluate the biogas scrubber effluent and provide a description of its handling, disposition, or disposal.

13. To optimize gas production, a highly organic supplemental feedstock material will be imported to the facility and combined with manure for digester feedstock. The character of this supplemental feedstock is not known at this time, but reportedly, it may include a combination of materials such as non-saleable ice cream or salad dressing, used frying oil from fast food restaurants, grape seed oil, cotton seed oil protein powders and sugary flavorings, stillage from corn-based ethanol manufacturing, and fatty water skimmings. Cheese process wastewater, or whey, will not be used.
14. Wastewater will be blended with irrigation water in the wastewater retention system prior to application to cropland. The total dissolved solids (TDS) concentrations will vary over the storage period (November to February) with the input of stormwater runoff into the wastewater retention system. The expected range of constituent concentrations are: total nitrogen between 500 and 1,640 milligrams per liter (mg/L), total phosphorous between 150 to 500 mg/L, and total dissolved solids between 2,500 and 8,200 mg/L, depending upon the season.
15. For purposes of this Order, "waste" includes, but is not limited to, manure, leachate, process wastewater, digester effluent, gas treatment effluent, precipitation that contacts raw materials, products, or byproducts such as manure, supplemental feedstock, digester effluent, biogas scrubber effluent, compost piles, silage, milk, or bedding.

Wastewater Ponds and Volume of Liquid Waste

16. The facility's existing wastewater retention system comprises two settling basins and two wastewater retention ponds with an approximate total retention capacity of 4.3 million cubic feet (with one foot of freeboard). The basin and pond depths are 10 feet below ground surface (bgs). The Confined Animal Regulations in Title 27 of the California Code of Regulations (Title 27) §22562 (d) require that, as a minimum, each pond shall be lined with, or underlain by, soils which contain at least 10 percent clay and not more than 10 percent gravel or artificial materials of equivalent impermeability. The facility's wastewater ponds were certified to meet the Title 27 soil texture requirements by Mr. Michael C. Mitchell, California Registered Professional Engineer No. 049434, in a 1 February 2005 report prepared by EAC Engineering, Inc. of Turlock, California.

17. Title 27 §22563(a) requires that application of manure and wastewater to cropland shall be at rates reasonable for the crop, soil, climate, special local situations, management system, and type of manure. The generally accepted best management practice for dairies is to provide for 120 days of wastewater storage during the winter months (December to March) when there is little, if any, irrigation demand. The existing retention capacity of the facility is sufficient to hold dairy wastewater through the winter months. However, digester operation will add over 963,000 cubic feet of effluent during the 120-day storage period.

Waste Application to Cropland

18. Best management practices for protection of water quality underlying the croplands include application of waste at rates, which are reasonable for the crop, soil, climate, special local situations, management system, and type of manure consistent with Title 27 CCR §22563(a). Reasonable application is considered to be application of wastes at a rate that does not unreasonably degrade and does not pollute the waters of California or create a nuisance condition. The constituents of concern in this facility's wastes are nutrients (primarily nitrogen compounds, but also potassium and phosphorus) and non-nutrient salts. Recent information published by the University of California (UC) indicates that an appropriate nutrient loading rate is between 1.4 to 1.65 times the nitrogen harvest rates¹. Reasonable application requires careful timing and prudent monitoring of crop nutrient requirements, available nutrients in the soil, and water inputs. Reasonable application is achieved by the implementation of an appropriate Nutrient Management Plan (NMP) to maximize harvest and minimize leaching. Reasonable application of irrigation water (including leaching fraction) results in an irrigation efficiency of no less than 75 percent.
19. The Discharger owns and farms 447 contiguous acres of cropland (hereafter "cropland") divided into 8 separate fields where dairy waste is applied and is shown in Attachment C, which is attached hereto and made a part of this Order by reference. In 2007, crops grown on this acreage were: 72 acres of alfalfa and 375 acres of double cropped wheat and corn silage. The current dairy operation is estimated to produce liquid and dry waste containing approximately 530 pounds of nitrogen and 2,600 pounds of inorganic salts per acre of cropland, respectively. Based on a study conducted by J.L. Meyer in 1973², "reasonable" salt loading rates under normal situations were determined to help prevent the vertical migration of salts within the soil profile. Unless environmental conditions show differently,

¹ University of California, Division of Agriculture and Natural Resources, Committee of Experts on Dairy Manure Management, Managing Dairy Manure in the Central Valley of California, September 2003, Revised February 2004, July 2004, and June 2005, pp 47.

² Meyer, J. L., 1973, Manure Waste Pounding and Field Application Rates, U. C. Agricultural Extension, Stanislaus, San Joaquin, and Merced Counties.

“reasonable” is accepted to be a maximum annual non-nitrate salt loading rate of 2,000 pounds per acre for single-cropped land and 3,000 pounds per acre for double-cropped land.

Site Specific Conditions

20. The facility is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and pan evaporation rates in the discharge area are about 7.0 and 63 inches, respectively, according to information published by the California Department of Water Resources (DWR). The 25-year, 24-hour precipitation event for the area around the facility is approximately 2 inches, according to National Weather Service maps for the Fresno County area near the facility (Mendota).
21. Soils in the land use area are classified as Kimberlina saline alkali-Garces complex, Westcamp loam, Lakeside loam, Lakeside clay loam, and Armona loam, according to the USDA Natural Resources Conservation Service.
22. As documented in the Federal Emergency Management Agency, Flood Insurance Rate Map for Fresno County, Community Panel 065029 2600F (dated 19 July 2001), the dairy production area is not within a 100-year floodplain. The map does show that portions of facility cropland adjacent to Fresno Slough (north and south of Floral Avenue) are inside the 100-year floodplain.
23. Land use in the facility vicinity is agricultural, including other confined animal operations. The City of Kerman is approximately seven miles north of the facility. Crops grown within five miles of the facility include corn (forage), cotton, wheat (forage), alfalfa, carrots, cotton, wine grapes, tomatoes, garlic, onions, walnuts and almonds.
24. Consistent with the United States Clean Water Act (CWA) §502(14) and 40 CFR §§122.2 and 122.23, the facility is a “concentrated animal feeding operation” and a “point source” and subject to the National Pollutant Discharge Elimination System (NPDES) permit program for any discharge to waters of the United States, other than discharges of agricultural storm water as defined in 40 CFR §122.23(e).

Groundwater Considerations

25. Regional unconfined to semi-confined groundwater is approximately 170 feet below ground surface (bgs) and flows southwesterly, according to information in *Lines of Depth Elevation of Water in Wells in Unconfined and Semi-confined Aquifer*, published by DWR in Spring 2005. A semi-confined to confined aquifer occurs

below the E-Clay layer of the Tulare Formation at depths below 500 feet bgs. The E-Clay separates the upper unconfined to semi-confined, regional aquifer from this lower aquifer. Although flow between the two aquifers was originally restricted, some agricultural wells within the vicinity are likely screened within the upper and lower aquifers. These wells allow hydraulic continuity between the upper and lower aquifers, resulting in lower quality water from the uppermost aquifer migrate into the higher quality waters below the E-Clay.

26. The facility obtains its source water from at least four wells. Reported analytical results for a sample collected in 2002 from an onsite water supply well were electrical conductivity (EC) at 975 microSeimens per centimeter ($\mu\text{S}/\text{cm}$), nitrate as nitrogen at 0.7 milligrams per liter (mg/l), and TDS at 855 mg/l .

Basin Plan, Beneficial Uses, and Water Quality Objectives

27. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, 1995*, Revised 2004 (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for protecting waters of the basin.
28. The facility is in Detailed Analysis Unit (DAU) No. 237 within the Tulare Lake Basin. The beneficial uses of groundwater in the Tulare Lake Basin include: municipal and domestic supply, agricultural supply, and industrial service supply.
29. The facility is in within the South Valley Floor Hydrologic Unit, No. 551. The beneficial uses of surface waters in the South Valley Floor Hydrologic Unit include: agricultural supply; industrial service supply; industrial process supply; water contact recreation; non-contact water recreation; warm freshwater habitat (including spawning); wildlife habitat; support of rare, threatened, or endangered species; and groundwater recharge.
30. The Basin Plan includes water quality objectives for chemical constituents that at a minimum, requires water designated as domestic or municipal supply to meet the Maximum Contaminant Levels (MCLs) specified in Title 22, CCR. The Basin Plan recognizes that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely effect beneficial uses.
31. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses.

32. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance.

Antidegradation

33. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter "Resolution 68-16"), prohibits degradation of groundwater unless it has been shown that:

- a. The degradation is consistent with the maximum benefit to people of the State;
- b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
- c. The degradation does not result in water quality less than that prescribed in State and Regional policies, including violation of one or more water quality objectives; and
- d. The discharger employs the best practicable treatment or control (BPTC) of the wastes to minimize degradation.

34. Constituents of concern that have the potential to degrade groundwater underlying the facility include salt (primarily sodium and chloride), nutrients (nitrogen), and boron. This Order requires the Discharger to implement BPTC of the wastes to minimize degradation. Degradation can occur from seepage to groundwater from three waste management areas on the facility: the corral area (including dry waste, and feed storage areas); the wastewater retention ponds; and the cropland. This Order, therefore, establishes schedules of tasks to evaluate BPTC for each waste management area of the facility and to characterize groundwater and all waste constituents. The evaluation of BPTC is required in the Order as outlined in the Provisions section below. Completion of this evaluation and implementation of the approved strategies developed from that work, will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

35. The Regional Water Board finds that some short-term degradation of groundwater beneath the facility is consistent with Resolution 68-16 provided that:

- a. The degradation is confined to a localized area and is temporally limited;
- b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating BPTC measures;

- c. The degradation is limited to waste constituents typically encountered in confined animal operations as specified in the groundwater limitations of this Order; and
 - d. The degradation does not result in water quality less than that prescribed by the Basin Plan.
36. Some degradation of groundwater by some of the typical waste constituents released with discharge from a confined animal facility (after effective source management, treatment, and control) is consistent with maximum benefit to the people of California. Global Warming Solutions Act (AB-32) signed by the Governor on 27 September 2006 requires the development of market mechanism that will reduce greenhouse gas emissions. The proposed project's reduction of greenhouse gas emissions from the dairy and the production of renewable energy are in keeping with the intent of AB-32. Secondary benefits include a reduction in ozone precursor compounds and hydrogen sulfide, which will improve air quality. Therefore sufficient reason exists to accommodate groundwater degradation around the facility, provided that the terms of the Water Quality Control Plan for the Tulare Lake Basin are met. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations of this Order is prohibited.
37. This Order establishes interim groundwater limitations for the facility that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains tasks for assuring BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Regional Water Board may reopen this Order to consider groundwater and other limitations to comply with Resolution 68-16.

California Environmental Quality Act

38. For the digester project at this facility, Fresno County is the lead agency pursuant to CEQA and has prepared an Initial Study and a mitigated negative declaration. [This finding will be revised to reflect actions by Fresno County. Regional Water Board staff has consulted with Fresno County Department of Public Work and Planning regarding the scope of the project and water quality issues that should be considered in the CEQA documents. Once the Initial Study and mitigated negative declaration are complete, Regional Water Board staff will review the documents and, if necessary, revise the proposed Order or delay it for consideration at a future date].

General Findings

39. Pursuant to California Water Code (CWC) §13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue this discharge. Failure to prevent conditions that create or threaten to create pollution or nuisance or that may unreasonably degrade waters of the State will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.
40. This Order does not authorize violation of any federal, state, or local law or regulation. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the Discharger from his liabilities under federal, state, or local law.
41. CWC §13267(b) states that "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including cost, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring these reports, the regional board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports."
42. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2008-____ are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the wastes subject to this Order.
43. These requirements are consistent with Title 27 CCR, Division 2, Chapter 7, Subchapter 2, regulating confined animal facilities.
44. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to CWC §13801, apply to all monitoring wells.

Public Notice

45. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
46. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order No. R5-2007-0035 no longer applies to Bernard te Velde and The 2000 te Velde Family Trust, and that, pursuant to §§ 13263 and 13267 of the CWC, Bernard te Velde, The 2000 te Velde Family Trust, Donald J. Cameron, and Terranova Ranch Inc. and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge of waste other than as defined in Finding 14 above, or of hazardous waste as defined in the CWC § 13150 (p) and Title 22 CCR § 66261.3 et seq., respectively, is prohibited.
2. Bypass or overflow of un-digested supplemental feedstock into the wastewater retention system or application cropland, is prohibited.
3. The direct or indirect discharge of waste and/or storm water from the production area of the facility to surface waters without an NPDES permit is prohibited. The production area is defined as the part of the facility that includes the animal confinement areas, manure storage area, raw material storage area, and waste containment area. It also includes the digester works, feedstock handling and storage area, digester effluent handling area, and the biogas scrubber area.
4. The discharge of wastewater to surface waters from the cropland without an NPDES permit, is prohibited. Irrigation supply water that comes into contact or is blended with waste or wastewater shall be considered wastewater under this Prohibition.
5. Precipitation related discharges of manure, litter, or process wastewater from cropland without an NPDES permit are prohibited, unless the discharges are agricultural stormwater discharges as defined in 40 CFR § 1222.23(e).
6. The disposal of dead animals in any liquid manure or wastewater system is prohibited. The disposal of dead animals at the facility is prohibited except when

federal, state, or local officials declare a State of Emergency and where all other options for disposal have been pursued and failed and the onsite disposal complies with all state and local policies for disposal of dead animals.

7. All animals shall be prohibited from entering any surface water within the animal confinement area (Title 27 CCR Section 22561).
8. The application of waste to lands not owned, leased, or controlled by the Discharger as described in Finding 3 without written permission from the landowner or in a manner not approved by the Executive Officer, is prohibited.
9. The direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells is prohibited.
10. Exceeding the mature herd size (milk and dry cows) as reported in Finding 4 by more than fifteen percent is prohibited.

B. Discharge Specifications

1. The collection, treatment, storage, or disposal of wastes at the facility shall not result in:
 - a. Discharge of waste constituents in a manner or place, or at concentrations or in a mass, which could cause exceedance of water quality objectives of surface water or groundwater;
 - b. Contamination or pollution of surface water or groundwater;
 - c. A condition of nuisance;
 - d. Exceedance of water quality objective; or
 - e. Unreasonably affect beneficial uses (as defined by the California Water Code § 13050 and the Basin Plan, Chapter 2).
2. The Discharger shall ensure that the annual average TDS salinity concentration in the wastewater retention ponds will not exceed 4,100 milligrams per liter (mg/L) TDS or 7,400 microSeimens per centimeter ($\mu\text{S}/\text{cm}$) EC. This interim specification will be reconsidered upon completion of the BPTC review.
3. The Discharger shall ensure that the biogas scrubber effluent is not discharged in a manner that will violate Title 22 §66268.3.

4. Wastes shall not be stored on site for more than 12 months. Any wastes not used within this time period must be removed from the property and disposed of properly.

C. Waste Application to Cropland Specifications

1. Title 27 CCR §22563(a) requires that application of manure and wastewater to cropland shall be at rates reasonable for the crop, soil, climate, special local situations, management system, and type of manure. This Order will require a review of BPTC, which will better define what are “reasonable” application rates. In the interim, reasonable application shall mean annual non-nutrient salt application rates shall not exceed 2,000 pounds per acre for fields that are single-cropped or 3,000 pounds per acre for fields that are double-cropped:
2. Land application of all waste from the facility shall be conducted in accordance with a NMP prepared by a specialist who is certified in developing NMPs. The NMP shall reflect actual crops grown at the facility, the actual form of nutrients and non-nutrient salts applied to each cropland field, and reasonable application rates.
3. The application of waste to the cropland shall be at rates that preclude development of vectors or other nuisance conditions and meet the conditions of the certified NMP. All wastewater applied to cropland must infiltrate completely within 72 hours after application. Tailwater must be conveyed back to the wastewater retention system for storage and reuse.
4. Application of waste shall be timed to minimize nutrient movement below the root zone. Wastewater shall not be applied to cropland during periods when the soil is at or above field moisture capacity.
5. Cropland that receives dry manure shall be managed to minimize erosion. Crops must be planted within one month of waste solids application.
6. Waste solids and wastewater shall not be applied closer than 100-feet to any down gradient surface waters, open tile line structures, sinkholes, or other conduits to surface waters unless a 35-foot wide vegetated buffer (for surface waters) or physical barrier is substituted for the 100-foot setback or alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions achieved by the 100-foot setback.
7. Waste and cropland shall be managed to prevent contamination of crops grown for human consumption. The term “crops grown for human consumption” refers only to crops that will not undergo subsequent processing which adequately removes potential microbial danger to consumers.

D. Interim Groundwater Limitations

1. These interim groundwater limitations are to be applied at the unconfined to confined aquifer below the shallow water zone beneath the facility. These limitations are based on either the maximum contaminant level (MCL) for the constituent as published in Title 22 CCR or other applicable Basin Plan objectives. Release of waste constituents from any treatment, storage, or disposal component associated with the facility shall not cause or contribute to groundwater:
 - a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality (as determined in the Findings and updated as appropriate as a result of ongoing monitoring), whichever is greater:
 - i. Nitrate as nitrogen of 10 mg/L (Title 22 CCR MCL);
 - ii. Chloride of 250 mg/L (Title 22 CCR Secondary MCL);
 - iii. Boron of 1.0 mg/L (crop sensitivity);
 - iv. Total Dissolved Solids of 500 mg/L (Title 22 CCR Secondary MCL);
 - v. Electrical Conductivity of 900 μ mhos/cm (Title 22 CCR Secondary MCL);
 - vi. Most probable number of total coliform (either E. coli or fecal coliform bacteria) not to exceed 2.2/100 milliliters (Title 22 CCR MCL);
 - vii. For constituents identified in Title 22 CCR, the MCLs quantified therein; and
 - viii. For salinity, a maximum average annual EC increase of no more than 4 microhos per centimeter (μ mhos/cm) (Basin Plan Groundwater Quality Objective).
 - b. Containing taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.
2. Final groundwater limitations will be developed based upon the results of the BPTC evaluations and monitoring conducted as directed by this Order and reported consistent with the Provisions below.

E. Provisions

1. The Discharger shall comply with all applicable provisions of the California Water Code, Title 27 CCR, and the Water Quality Control Plan for the Tulare Lake Basin, Second Edition, 1995, Revised 2004.

2. The Discharger shall comply with the attached Monitoring and Reporting Program No.R5-2008- ____ which is part of this Order, and future revisions thereto as specified by the Regional Water Board or the Executive Officer.
3. The Discharger shall submit a complete Report of Waste Discharge in accordance with the California Water Code § 13260 at least 140 days prior to any material change or proposed change in the character, location, or volume of the discharge, including any expansion of the facility, addition of waste storage facilities or equipment, closure of the facility, or development of any new treatment technology.
4. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Regional Water Board at least 60 days in advance of the change.
5. If site conditions threaten to violate Prohibitions **A.3.** or **A.4.** or Specification **B.1.**, the Discharger shall take immediate action to preclude the violation, documenting the condition and all corrective actions. Such actions shall be immediately reported to the Regional Water Board and summarized in the annual monitoring report. Alterations for the production area to avoid a recurrence shall be submitted as a modification to the facility's Waste Management Plan (WMP).
6. Any instance of non-compliance with this Order constitutes a violation of the California Water Code and its regulations. Such non-compliance is grounds for enforcement action, and/or termination of the authorization to discharge.
7. This Order shall become effective upon adoption by the Regional Water Board.
8. If during the performance of the inspections required by the MRP attached to this order, deficiencies, defects, and/or impending failures are observed in any of the wastewater conveyance, control, and/or retention structures, the Discharger shall take immediate action to correct and/or prevent unauthorized release. The corrective action(s) should be documented and these records attached to the pertinent inspection report.
9. Technical reports required by this Order must be certified by an appropriately licensed professional as required in this Order and its Attachments. If the Executive Officer provides comments on any technical report, the Discharger shall address those comments.
10. **By 30 March 2008**, the Discharger shall submit a hydrogeologic report for the area affected or potentially affected by the facility to the Executive Officer. The technical

report shall describe the underlying geology, existing wells (active or otherwise), well restrictions, and hydrogeology. The report shall include a Monitoring Well Installation Work Plan that recommends a monitoring well network to collect data from the first encountered groundwater up gradient from the influence of the facility and down gradient from each of the waste management areas (e.g., corrals, wastewater retention ponds, digester works, and cropland). The network shall be sufficient to evaluate performance of BPTC measures and to determine compliance with the Order's Groundwater Limitations. The recommendations shall be reviewed and approved by the Executive Officer.

11. The Discharger shall comply with the following compliance schedule in implementing the groundwater monitoring approved by the Executive Officer in Provision 10:

<u>Task</u>	<u>Compliance Date</u>
a. Complete Monitoring Well Installation	120 days following Work Plan approval by Executive Officer
b. Commence Groundwater Monitoring	30 days following completion of Task 11. a
c. Submit Monitoring Well Installation Report of Results	60 days following completion of Task 11. b.
d. Submit technical report that characterizes water quality in approved groundwater monitoring network for all monitored constituents	Two years following completion of Task 11. c.

12. By **1 July 2008**, the Discharger shall submit a written work plan for a BPTC technical evaluation that sets forth a schedule for a systematic and comprehensive technical evaluation for each component of the facility's waste treatment and control to determine for each waste constituent BPTC as used in Resolution 68-16. The work plan shall contain a time schedule for completing the comprehensive technical evaluation. The schedule to complete the BPTC Technical Evaluation shall be as short as practicable, and shall not exceed two years. Upon written determination of adequacy of the technical report by the Executive Officer, the Provision shall be considered satisfied.

13. By **1 October 2008**, the Discharger shall formulate and implement a Waste Management Plan (WMP) to demonstrate that waste management facilities, equipment, and practices in the production area meet the requirements of this Order.

Additional information and guidance on preparing the WMP can be found in Attachment B of the Waste Discharge Requirements General Order R5-2007-0035 for Existing Milk Cow Dairies (Dairy General Order) at:
http://www.waterboards.ca.gov/centralvalley/adopted_orders/GeneralOrders/R5-2007-0035.pdf

In addition to the elements outlined in Attachment B of the Dairy General Order, the elements of the WMP for this facility shall include:

- a. A certification that the facility operations and maintenance (O&M) instructions for the dairy and digester operations, that address each waste handling component of the facility (dairy and digester), and standard and emergency procedures. The O&M instructions should include the facility Emergency Response Plan. The O&M should contain instructions for the wastewater conveyance and storage features (including tailwater recovery), feed and waste storage areas, the digester area and handling of digester feed stock and effluent, and the handling and disposal/removal of cattle mortalities. The O&M instructions should be written to ensure that all specifications, limitations, and provisions of this Order are met and violations of prohibitions are prevented. A copy of these instructions should be available to employees at all times.
 - b. An evaluation of the biogas scrubber effluent and a description of its handling and disposition to demonstrate compliance with applicable laws and regulations.
14. By **1 October 2008**, the Discharger shall formulate and implement a NMP for application of the facility waste to the facility's cropland. The NMP shall be submitted to the Executive Officer for review and approval. Failure to comply with the NMP is a violation of this Order. A copy of the NMP must be maintained at the dairy. The NMP must provide for protection of both surface water and groundwater. The purpose of the NMP is to control the recycling of waste generated on the facility to minimize their potential to degrade groundwater quality. The objective of the NMP is to manage the application of the waste to the cropland and disposal off-site to achieve a balance between nutrients and salts generated, crop requirements, and leaching to underlying groundwater. Additional information and guidance on preparing a typical NMP can be found in Attachment C of the Dairy General Order at: http://www.waterboards.ca.gov/centralvalley/adopted_orders/GeneralOrders/R5-2007-0035.pdf

In addition to the elements outlined in Attachment C of the Dairy General Order, the elements of the NMP for this facility shall include:

- a. Formulating a water balance for the entire facility to estimate the amount of wastewater generated, the amount of irrigation water added to the wastewater retention system, and the amount of blended wastewater and irrigation water applied to the cropland. The NMP shall reflect a goal of 75 percent irrigation efficiency, for each field determined.

- b. Adoption of salt reduction actions as specified in the Salinity Evaluation and Minimization Plan (when approved).
 - c. Yearly evaluation of the results to modify the next year's NMP to maximize crop yield and minimize leaching potential and to be included in the facility's annual report.
 - d. By calendar year 2010 total nitrogen applied to the cropland shall not exceed 1.4 times the nitrogen removed by the harvested portion of the crop. Additional application of nitrogen is allowable if plant tissue testing indicates it is necessary to obtain typical crop yield on written recommendations from a professional agronomist and records are maintained documenting the need.
15. **By two years from satisfaction of Provision 12**, the written BPTC Technical Evaluation report shall be submitted with the Discharger's written recommendations for any facility modifications (e.g., component upgrade and retrofit) and/or operations modifications that are necessary to ensure BPTC. The proposed schedule for modifications shall be identified. The schedule shall be as short as practicable but in no case shall completion of the necessary improvements exceed four years past the Executive Officer's determination of the adequacy of the comprehensive technical evaluation submitted pursuant to this provision unless the schedule is reviewed and specifically approved by the Regional Water Board. The adequacy of the component evaluation, recommended improvements, and schedule are subject to the Executive Officer's review and determination.
16. **By 1 July 2009**, the Discharger shall submit a Salinity Evaluation and Minimization Plan that identify sources of salt in waste generated at the facility both in the dairy and digester operations. This report must evaluate measures that can be taken to minimize salt in the facility waste, and commit to implement these measures identified to minimize salt in the waste within the NMP. The report must include a proposed implementation schedule. The adequacy of the salinity evaluation, recommended measures to minimize salt in the wastes, and schedule are subject to the Executive Officer's review and determination.
17. The groundwater limitations set forth in this Order are not final and not an entitlement. **By 1 July 2012**, the Discharger shall submit a Groundwater Limitations Analysis report proposing specific numeric groundwater limitations for each waste constituent that reflects full implementation of BPTC and reflecting applicable water quality objectives for that waste constituent. The report shall describe in detail how these were determined, considering actual data from monitoring wells comprising the approved groundwater monitoring program, impact reductions through full implementation of BPTC, the factors in Water Code § 13241, Resolution 68-16, the

Basin Plan, etc. The Discharger may submit results of a validated groundwater model or other hydrogeologic information to support its proposal.

18. Upon completion of tasks set forth in Provision 17, the Regional Water Board shall consider the evidence provided and make a determination regarding (a) whether the Discharger has justified BPTC and (b) the appropriate final numeric groundwater limitations that comply with Resolution 68-16.
19. Modification of any existing pond or construction of any new pond shall not begin until the Executive Officer notifies the Discharger in writing that the design report is acceptable.
20. Waste shall not be placed into any new or modified wastewater retention pond until the Executive Officer notifies the Discharger in writing that the post construction report is acceptable.
21. In the event the monitoring implemented under this Order detects evidence of a failure to meet Discharge Specification **B.1**, the NMP shall be modified within 90 days. The modifications must be designed to bring the facility into compliance with this Order. The Discharger shall notify the Regional Water Board in writing with details of any proposed changes before the changes are made in the field. Any plan shall be updated as necessary or if the Executive Officer requests that additional information be included.
22. If the Regional Water Board or Executive Officer notifies the Discharger that the NMP is not consistent with this Order, revisions shall be made by a specialist who is certified in developing Nutrient Management Plans and submitted to the Regional Water Board in writing within 30 days of notification.
23. Settling basins and retention ponds at the facility shall be managed and maintained to prevent breeding of mosquitoes and other vectors. In particular:
 - a. Small coves and irregularities shall not be allowed around the perimeter of the water surface;
 - b. Weeds shall be minimized through control of water depth, harvesting, or other appropriate method;
 - c. Dead algae, vegetation, and debris shall not accumulate on the water surface; and
 - d. Management shall be in accordance with the requirements of the Mosquito Abatement District.

24. All precipitation and surface drainage from outside of the facility (i.e., "run on") shall be diverted away from any manured areas unless such drainage is fully contained (Title 27 § 22562(b)).
25. All roofs, buildings, and non-manured areas located in the production area at the facility shall be constructed or otherwise designed so that clean rainwater, including roof drainage, is diverted away from manured areas, including corrals and waste containment facilities, unless such drainage is fully contained in the wastewater retention system (Title 27 § 22562(b)).
26. The milk parlor, animal confinement area (including corrals), manure and feed storage areas, and the digester equipment area shall be designed and maintained to convey all water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water and the infiltration of water into the underlying soils. The Discharger shall, at a minimum of once per year, backfill any slope loss with compacted, non-manured material to maintain pre-existing slopes.
27. Unlined ditches, swales, and/or earthen-berm channels may not be used for storage of wastewater, dry waste, or tailwater and may only be used for conveyance of wastewater from the retention lagoon to the cropland area, irrigation return water management, or temporary control of accidental spills.
28. The Discharger shall comply with all of the terms of this Order including the Standard Provisions and Reporting Requirements for milk cow dairies dated 25 January 2008, attached to and made part of this Order.
29. The Discharger shall maintain a copy of this Order and its attachments at the site to be available at all times to site-operating personnel. The Discharger, landowner and key operating personnel shall be familiar with the content of this Order.
30. The Regional Water Board will review this Order periodically and may revise requirements when necessary. If upon completion of the BPTC Technical Evaluation Report, the Regional Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of any Groundwater Limitation, this Order may be reopened for consideration of additional or revision of appropriate numerical effluent or groundwater limitations for the problem constituents.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2008-XXXX
BERNARD TE VELDE, THE 2000 TE VELDE FAMILY TRUST,
DONALD J. CAMERON, AND TERRANOVA RANCH, INC.
| LONE OAK DAIRY #2, FRESNO COUNTY

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I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

PAMELA C. CREEDON, Executive Officer

Order Attachments:

Monitoring and Reporting Program
A. Location Map
B. Production Area Map
C. Facility Map
D. Dairy Digester System Process Flow Diagram
Information Sheet
Standard Provisions

JB: 12/18/07